

**REMARKS**

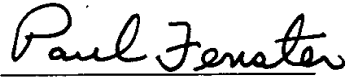
The present application is a U.S. national application of PCT Application No. PCT/IL00/00056 filed January 27, 2000. The claims in the present application were amended by limiting the number of claims and removing multiple dependencies, to reduce costs and put them in better form for examination in the US.

Applicants wish to bring to the attention of the Examiner that the present amendments are based on claims 1-8 attached to the IPER and claims 9-99 as originally published.

A marked-up "Related Applications" section as well as a marked-up set of the amended claims are attached hereto.

An examination on the merits is respectfully requested.

Respectfully submitted,  
O. GLOBERMAN et al.

  
Paul Fenster  
Reg. No. 33,877

July 23, 2001  
William H. Dippert, Esq.  
Cowan, Liebowitz and Latman, P.C.  
1133 Avenue of the Americas  
New York, NY 10036-6799

Tel: (212) 790-9200

**Marked-Up Version of Amendments**

**--RELATED APPLICATIONS**

This application is a U.S. national filing of PCT Application No. PCT/IL00/00056, filed January 27, 2000. This application is also related to [two] PCT Application Nos. PCT/IL00/00055 and PCT/IL00/00058, [applications, which designate the US, are filed on even date with the instant application in the Israel receiving office, by applicant Disc-O-Tech Medical Technologies, Ltd. And have attorney dockets 110/01325 and 110/01362 ]the disclosures of which is incorporated herein by reference.--

0000318-02501  
F0522037E06660

**Version with Markings to Show Changes Made**

6. (Amended) Apparatus according to claim 3 ~~any of claims 3-5~~, wherein said force application mechanism moves said force applicator during one stroke of said reciprocating motion.

5

9. (Amended) Apparatus according to claim 2 ~~any of claims 2-8~~, wherein said force application mechanism comprises a selective coupler that selectively couples said input motion to said force applicator.

10. (Amended) Apparatus according to claim 2 ~~any of claims 2-9~~, wherein said element positioning mechanism comprises a selective coupler that selectively couples said input motion to said restraining element.

11. (Amended) Apparatus according to claim 2 ~~any of claims 2-10~~, wherein said synchronized motion is repetitive, comprises a plurality of cycles of positioning said restraining element and applying said force.

12. (Amended) Apparatus according to claim 2 ~~any of claims 2-11~~, wherein said motion is applied simultaneously to said restraint element positioning mechanism and to said force application mechanism.

13. (Amended) Apparatus according to claim 2 ~~any of claims 2-11~~, wherein said motion is applied alternately to said restraint element positioning mechanism and to said force application mechanism.

15. (Amended) Apparatus according to claim 2 ~~any of claims 2-14~~, wherein said force input comprises a manual force input.

16. (Amended) Apparatus according to claim 2 ~~any of claims 2-14~~, wherein said force input comprises a motorized force input.

17. (Amended) Apparatus according to claim 1 ~~any of claims 1-16~~, wherein said synchronizer is integrated with said mechanisms.

a

18. (Amended) Apparatus according to claim 1~~any of claims 1-17~~, wherein said synchronizer is manual, providing an indication to an operator to switch between the mechanisms.

19. (Amended) Apparatus according to claim 1~~any of claims 1-17~~, wherein said synchronizer is automatic, switching by itself between the mechanisms.

20. (Amended) Apparatus according to claim 1~~any of claims 1-19~~, wherein said synchronizer comprises a pin extractor for decoupling a pin from one mechanism and coupling the pin to another mechanism.

22. (Amended) Apparatus according to claim 1~~any of claims 1-21~~, wherein said synchronizer blocks the motion of one of said mechanisms when a desired motion effect of said mechanism is achieved.

24. (Amended) Apparatus according to claim 1~~any of claims 1-23~~, wherein said restraint mechanism comprises an unevenly surfaced element for coupling said motion to said restraint element.

25. (Amended) Apparatus according to claim 1~~any of claims 1-24~~, wherein said force application mechanism comprises an unevenly surfaced element for coupling said motion to said force applicator.

26. (Amended) Apparatus according to claim 24~~any of claims 24-25~~, wherein said unevenly surfaced element comprises a nubbed plate.

28. (Amended) Apparatus according to claim 24~~any of claims 24-25~~, wherein said unevenly surfaced element comprises an apertured plate.

29. (Amended) Apparatus according to claim 24~~any of claims 24-28~~, wherein said uneven surface comprises even surface portions separated, by uneven surface portions, a plurality of separation distances defined by said separation of surface portions.

31. (Amended) Apparatus according to claim 29~~or claim 30~~, wherein said separation distances take into account a plastic deformation of said implant.

32. (Amended) Apparatus according to claim 29~~any of claims 29-31~~, wherein said separation distances take into account an elastic deformation of said implant.

5 33. (Amended) Apparatus according to claim 29~~any of claims 29-31~~, wherein said separation distances take into account a spring-back of said implant.

34. (Amended) Apparatus according to claim 1~~any of claims 1-33~~, wherein said force applicator and said force application mechanism are substantially restricted to a straight,  
10 narrow, elongate volume, thereby reducing moments on the force application mechanism.

35. (Amended) Apparatus according to claim 1~~any of claims 1-34~~, wherein said force applicator pushes against said implant.

15 36. (Amended) Apparatus according to claim 1~~any of claims 1-34~~, wherein said force applicator pulls a base against a far side of said implant.

37. (Amended) Apparatus according to claim 1~~any of claims 1-36~~, wherein said force applicator exhibits axial motion, along an axis connecting the force applicator and the implant.

20 38. (Amended) Apparatus according to claim 1~~any of claims 1-37~~, wherein said force applicator exhibits rotational motion, around an axis connecting the force applicator and the implant.

25 40. (Amended) Apparatus according to claim 1~~any of claims 1-39~~, wherein said restraint element exhibits axial motion, along an axis connecting the force applicator and the implant.

41. (Amended) Apparatus according to claim 1~~any of claims 1-40~~, wherein said restraint element exhibits rotational motion, around an axis connecting the force applicator and the  
30 implant.

43. (Amended) Apparatus according to claim 1~~any of claims 1-42~~, wherein said force applicator applies at least 20 Kg to said implant.

44. (Amended) Apparatus according to claim 1~~any of claims 1-42~~, wherein said force applicator applies at least 40 Kg to said implant.

45. (Amended) Apparatus according to claim 1~~any of claims 1-42~~, wherein said force applicator applies at least 60 Kg to said implant.

46. (Amended) Apparatus according to claim 1~~any of claims 1-42~~, wherein said force applicator applies at least 100 Kg to said implant.

47. (Amended) Apparatus according to claim 1~~any of claims 1-46~~, wherein said restraint element and said force applicator are elongate elements.

49. (Amended) Apparatus according to claim 47~~or claim 48~~, wherein said cylindrical elements are tubes.

50. (Amended) Apparatus according to claim 1~~any of claims 1-49~~, wherein said force applicator comprises two concentric elements, an outer element which applies force away from said apparatus towards said implant and an inner counter force element that applies force from said implant towards said apparatus.

53. (Amended) Apparatus according to claim 50~~any of claims 50-52~~, wherein said motion of said force applicator comprises motion of only one of said concentric elements relative to said apparatus.

56. (Amended) Apparatus according to claim 50~~any of claims 50-55~~, wherein said inner element is decoupled from said implant by unscrewing it.

58. (Amended) Apparatus according to claim 1~~any of claims 1-57~~, comprising a handle for holding said apparatus by an operator.

59. (Amended) Apparatus according to claim 1~~any of claims 1-58~~, comprising means for fixing said apparatus to said patient.

*a*

60. (Amended) Apparatus according to claim 1 ~~any of claims 1-59~~, comprising means for fixing said apparatus to a bed on which said patient lies.

61. (Amended) Apparatus according to claim 1 ~~any of claims 1-60~~, wherein said synchronizer adapts said apparatus for deforming a particular implant from a set of same types of implants having different geometries.

62. (Amended) Apparatus according to claim 1 ~~any of claims 1-61~~, wherein said synchronizer synchronizes said force applicator to apply force to said implant after said implant is completely expanded.

63. (Amended) Apparatus according to claim 1 ~~any of claims 1-62~~ wherein said restraint element has an outer diameter of less than 7 mm.

64. (Amended) Apparatus according to claim 1 ~~any of claims 1-62~~ wherein said restraint element has an outer diameter of less than 6 mm.

65. (Amended) Apparatus according to claim 1 ~~any of claims 1-62~~ wherein said restraint element has an outer diameter of less than 5 mm.

66. (Amended) Apparatus according to claim 1 ~~any of claims 1-62~~ wherein said restraint element has an outer diameter of less than 4 mm.

67. (Amended) Apparatus according to claim 1 ~~any of claims 1-66~~, wherein said implant is a spinal implant for fusing adjacent vertebrae.

68. (Amended) Apparatus according to claim 1 ~~any of claims 1-66~~, wherein said implant is an axially contracting and radially expanding implant.

69. (Amended) Apparatus according to claim 1 ~~any of claims 1-66~~, wherein said implant comprises a slotted tube, which as it contracts, radially extends a plurality of spikes and wherein said restraining element encloses said tube and prevents the extension of at least one of said spikes.

*a*

00000313-072504  
T05220-31E00860

70. (Amended) Apparatus according to claim 1~~any of claims 1-66~~, wherein said implant comprises a slotted tube, to which force is applied against an end of said tube, to deform the tube.

5 | 71. (Amended) Apparatus according to claim 1~~any of claims 1-66~~, wherein said implant radially expands by said deforming at least by a ratio of two.

72. (Amended) Apparatus according to claim 1~~any of claims 1-66~~, wherein said implant radially expands by said deforming at least by a ratio of four.

10 | 75. (Amended) A method according to claim 73~~or claim 74~~, wherein said restraining element is inside said implant.

15 | 76. (Amended) A method according to claim 73~~or claim 74~~, wherein said restraining element is outside said implant.

77. (Amended) A method according to claim 73~~any of claims 73-76~~, wherein said motion of said restraining element is controlled using a mechanism external to the implant.

20 | 80. (Amended) A method according to claim 78~~or claim 79~~, comprising converting said continuous motion into discrete application of force to said implant.

81. (Amended) A method according to claim 73~~any of claims 73-80~~, wherein said motion and said force application do not overlap in time.

25 | 82. (Amended) A method according to claim 73~~any of claims 73-80~~, wherein said motion and said force application do overlap in time.

30 | 92. (Amended) Apparatus according to claim 90~~or claim 91~~, wherein said tube comprises defines at least two slots and wherein said at least one wing comprises at least two wings.

93. (Amended) Apparatus according to claim 90~~any of claims 90-92~~, wherein extension of said wings retracts said shaft towards said wings.



94. (Amended) Apparatus according to claim 90~~any of claims 90-92~~, wherein extension of said shaft away from said wings extends said wings.

95. (Amended) Apparatus according to claim 90~~any of claims 90-94~~, wherein said wings are  
5 molded from a single piece of plastic.

96. (Amended) Apparatus according to claim 90~~any of claims 90-95~~, wherein said at least one wing defines a parallelogram, with the shaft attached to one vertex of the parallelogram and the two neighboring vertexes of the parallelogram comprises the extended parts of two wings.

10 97. (Amended) Apparatus according to claim 90~~any of claims 90-95~~, comprising a dial coupled to said shaft and displaying an extension of said wings as a function of a relative displacement between said shaft and said tube.

15 99. (Amended) Apparatus according to claim 90~~any of claims 90-97~~, comprising an axial position control for controlling an axial position of said tube relative to a body.

✓  
a

090918-0350  
F05220-87E06360